



September 28, 2015

**Responses of Michael Slinger, Director, Google Fiber Cities
House Energy and Commerce Subcommittee on Communications and Technology
Hearing on “Promoting Broadband Infrastructure Investment,” July 22, 2015**

Question for the Record from the Honorable Greg Walden

1. Mr. Slinger, Google Fiber chose not to roll out small business offerings immediately in Kansas City. Google Fiber began service small business in November of 2014 – some 2 or 3 years after residential service began in Kansas City. Was there a particular level of service that you felt that Google Fiber could not offer straightaway? Were there regulatory or legal constraints that prevent Google fiber from doing so?

Google Fiber’s decision not offer a small business service at the same time we began delivering residential service in Kansas City was not based on regulatory or legal constraints. Late last year, we began offering Google Fiber for Small Business in Kansas City, and have since expanded to Provo, UT and Austin, TX. We wanted to focus on residential service first to meet the high consumer demand. Moreover, we needed to better understand the needs of small business so that we could offer a service that would meet those needs and deliver the same innovation and value our residential customers have experienced. To do so, Google Fiber for Small Business includes a symmetric gigabit Internet connection, an option for up to 5 static IPs, the flexibility to provide your own router, and 24x7 customer support.

2. Mr. Slinger, knowing what you now have learned about fiber deployment, would you recommend that municipalities build out their own fiber networks? What would be the best way to go about bringing high-speed networks to a small town or city? How does that change for a very small town – e.g. a town of 1200 people?

While it may not make sense for most local governments to operate broadband networks themselves, we think faster, better broadband for all Americans is too important to remove any option for deployment. Along with investments by Google and other private providers, cities like Lafayette, LA and Chattanooga, TN have been investing in their own networks to ensure that their communities have the same advantages as other communities with access to privately constructed high speed broadband networks.

Another interesting approach is the public/private partnership model offered by the city of Westminster, MD and Ting. The City financed, owns, and maintains the fiber; Ting leases the fiber and provides all equipment and services. Ting's lease reduces the City's risk, while enabling Ting to offer Gigabit Internet in Westminster without having to build a fiber network from scratch.

Google believes it is important for users to be able to control their own Internet connections and for communities to make their own choices to suit their local needs for broadband. The factors bearing on whether to build, enter into a public/private partnership, or wait for a private broadband provider to invest in the community vary from community to community. It is difficult to generalize what is best for a community of any size.

Question for the Record from the Honorable Kevin Cramer

1. One of the main drivers of broadband investment is video. The ability to provide desirable video content has a direct effect on broadband adoption and ongoing operation of broadband-cable networks.

A. Are reforms needed to enhance consumer video experience and ensure outdated rules or other failures in the video distribution market do not undermine our nation's broadband goals?

Offering video services increases the utility of a broadband network, provides more choice for the user, and improves the economics for new broadband infrastructure entrants. It also opens additional avenues for distributing diverse public media and for content creation, as well as consumption. However, the inability of new entrants to negotiate reasonable prices and terms for access to popular broadcast stations and cable programming networks makes it difficult to attract and retain subscribers for these smaller broadband networks, thereby serving as a barrier for more ubiquitous and affordable broadband access. Thus, the difficulty of obtaining programming on prices and terms that will allow for competition with incumbent video service providers renders new entrants and small providers unable to offer competitive multichannel video services. This in turn hinders deployment of high-speed networks, resulting in less broadband competition and inferior broadband networks.

A specific action that can be taken to eliminate outdated rules undermining our nation's broadband goals is fixing the current co-op structure for negotiating rates and terms for programming agreements. Pursuant to the current co-op regime, individual programmers can opt out of collective agreements with providers, and can charge rates that vary widely based on each individual co-op member's subscriber base. This structure gives large incumbents a significant advantage over competitors seeking to establish or expand their services, because incumbents can obtain greater volume discounts as a result of their larger subscriber bases. Multichannel video service—and broadband Internet access generally—will become more

competitive and more attractive to consumers if access to content is made available on commercially reasonable prices and terms to competitive providers.

Another failure in the video distribution market is the stranglehold that large, incumbent MVPDs have on video navigation devices. Because they lack the ability to procure devices at retail, consumers are paying significant fees to rent set-top equipment that has not kept pace with the rest of the consumer electronics industry. To resolve this problem, policymakers can promote retail competitive availability of video navigation equipment. Similar to the recommendation in the National Broadband Plan, policymakers should explore ways to increase consumers' abilities to acquire at retail competitive navigation devices (e.g. set-top boxes) to access video programming from MVPDs and over the Internet. This will help encourage broadband deployment and adoption by increasing innovation in consumer access to video service offerings purchased from MVPDs alongside those available online.

The Downloadable Security Technology Advisory Committee ("DSTAC") was tasked in the STELA Reauthorization Act of 2014 "to identify, report, and recommend performance objectives, technical capabilities, and technical standards of a not unduly burdensome, uniform, and technology- and platform-neutral software-based downloadable security system" to promote the competitive availability of navigation devices in furtherance of Section 629 of the Communications Act. Adoption of a technology- and platform-neutral software solution would enable device-makers to create better and more tailored ways for consumers to interact with their video service. This, in turn, would strengthen demand for advanced broadband networks supporting these video services and technologies. The DSTAC filed a report with the FCC on September 4, 2015 detailing its findings and recommendations, on which the FCC has since sought comment. The FCC should act quickly on the DSTAC's report finally to bring Congress's goals in adopting Section 629 to fruition.

B. While net neutrality rules are focused partly on concerns about how network operators could treat content providers, what about the concerns of how content providers use bargaining power and threaten affordable consumer access to content?

Broadband competition is impeded by the inability of new and smaller video service providers to obtain programming at prices that allow them to design affordable consumer offerings. Video programming distributors with large subscriber bases, including incumbent cable operators, obtain sizable discounts on popular programming that do not reflect correspondingly lower costs of delivering the content to these large providers. To resolve this disparity, policymakers and regulators should require that discounts provided by both broadcast stations and cable programming networks are cost-based. For instance, Section 628 of the Communications Act makes it unlawful for a video programmer that is vertically integrated with a cable operator to discriminate between multichannel video programming distributors with respect to the prices, terms, and conditions of sale of satellite cable programming. Although the statute allows cost-based discounts, the FCC has not required cable-affiliated programmers to demonstrate

that the discounts they give the largest distributors are cost-justified. The FCC's policy of allowing non-cost-based discounts under the guise of permitted volume discounts undermines broadband entry and deployment.

Question for the Record from the Honorable Ben Ray Lujan

1. Mr. Slinger, far too many Americans in rural communities lack access to broadband services. Now, while I would love to see Google Fiber in Northern New Mexico, it may not make sense everywhere. As a result, I believe that we have to look for creative and innovative ways to connect more people. For example I know that Google has purchased a New Mexico-based startup, Titan Aerospace in hopes that their solar-powered satellites could be used to bring Internet access to remote areas.

A. Can you and the other witnesses discuss additional innovative solutions to this issue?

As compared to building broadband networks in urban areas, deploying in rural areas is a totally different challenge, with different economics. In many situations, wireless technologies provide a better path to offer broadband service in these areas. While we don't have any undertakings specifically focused on this challenge today, ideas like Project Loon (our initiative to develop balloon-powered Internet access) and Titan Aerospace could help greatly improve access in rural areas.

Project Loon is an effort to beam internet access down from balloons that hover safely in the stratosphere, 20 km above the earth's surface and well above weather events, wildlife and planes. The project started as an experiment. While others had tried to provide Internet access through balloons that were tethered to the ground, our hunch was that a ring of balloons, flying around the globe, could be a better, more effective, and cheaper way to deliver access. Loon balloons ride the winds by moving up and down into different layers of wind, allowing balloons to move at different speeds and in different directions. By predicting wind patterns and controlling across a fleet of balloons, we aim to create continuous coverage for our service areas, so when one balloon leaves a served location, another can take its place. The Project Loon team is now engaged in testing with a number of telcos outside the United States, including Telefonica, Telstra, and Vodafone, and we're in commercial discussions with various potential partners about integrating Loon into their networks.

Providing access to remote or rural areas was a key reason why we acquired **Titan Aerospace**. The Titan team is building a new type of super-lightweight, solar-powered airplane capable of hovering in one area of the stratosphere. Google thought this could be a way to beam Internet down to a targeted area on the ground below, perhaps to supplement existing services with

extra bandwidth, or to provide access in an area that's suddenly offline (such as after an earthquake or other disaster).

Loon and Titan would be able to work in tandem. As Loon's constellation of balloons provides coverage to wide areas, Titan aircraft could be maneuvered to provide additional capacity to particular areas based on demand. In both instances, partnerships with telcos could enable provision of service to people on the ground. Users should be able to just have access, and not have to worry about what technology is being used to provide it.

We also see a lot of promise for continued innovation in the wireless area, which is why I'll end on the importance of **white space and spectrum sharing**. All wireless relies on a crucial input: radio spectrum. Today, ongoing improvements in technology allow sharing of spectrum on a much broader and more flexible basis, and Google is investing to help facilitate even more spectrum sharing. For instance, in the U.S., Google built a database to help make use of unused spectrum between TV channels, called "white spaces." The database aims to allow dynamic sharing to maximize the beneficial use of spectrum. Registered devices can query a database and determine, for a given location, what frequencies can be used while protecting licensed entities and wireless microphone signals from harmful interference. The result is affordable access to otherwise vacant spectrum and more efficient use of spectrum resources.